Anesthesia Rotation
General Surgery

Rotation Manual

UCLA Department of Anesthesiology
David Geffen School of Medicine

Section I

Introduction

Welcome to your clinical rotation in the Department of Anesthesiology. In this brief rotation, our objective is to provide you with an overview of day-to-day responsibilities of an anesthesiologist as well as the intricacies and processes involved with providing a safe anesthetic.

The anesthesiologist is the perioperative physician who provides medical care to each patient throughout his or her surgical experience. This includes medically evaluating the patient before surgery, consulting with the surgical team, providing pain control and supporting life functions during surgery, and supervising care as well as discharging the patient from the recovery unit. During your anesthesia rotation, our goal is for you to become familiar with the basic equipments involved with providing anesthesia, obtain clinical experience in airway management, and obtain experience in the perioperative and intraoperative management of patients receiving general or regional anesthesia.

In order to achieve the above goals and objectives, your rotation will start with an orientation followed by rotations through various perioperative and anesthetizing locations. At least 1 day will be spent at the Preoperative Evaluation Suite (PES) where you will participate in preoperative evaluation and optimization of surgical candidates. You will also spend time shadowing the anesthesia Team Captain who covers STAT consults for airway management, responds to cardiopulmonary arrests (Code Blue), responds to code trauma in the ER, and triages/optimizes patients who need emergency surgery. You will also spend time in anesthetizing locations outside of the OR where you will learn mask ventilation and maintaining an airway without an endotracheal tube. The bulk of your rotation will be in the Main OR where we spend most of our time. In addition to clinical experience, you will also join our didactic and case conferences which are held each Tuesday afternoon from 1530 to 1700 in the Bauer Auditorium (BH-173).

I hope the upcoming experience will help you gain a greater appreciation and understanding of the practice of anesthesiology. This will no doubt foster better teamwork and collaboration in the care of our mutual patient in the perioperative setting. I hope you work hard and enjoy your anesthesia rotation.

Joe Hong, M.D.

UCLA GENERAL SURGERY RESIDENCY PROGRAM
ROTATION GOALS AND OBJECTIVES

UPDATED: July 2006

ROTATION: ANESTHESIA

ROTATION DIRECTOR: Randolph Steadman, M.D.

CHIEF OF ANESTHESIA: Patricia Kapur, M.D.

SITE: UCLA Medical Center

GOALS:
1. Become familiar with basic equipment involved with providing anesthesia
2. Obtain clinical experience in airway management
3. Obtain experience in the perioperative and intraoperative management of patients receiving general or regional anesthesia

LEVEL OF TRAINEE: R1

ASSESSMENT:
Monitoring of the accomplishment of the stated objectives will be performed using the following methods:
1. Global Rating: end of rotation evaluation of resident performance to assess the resident's demonstration of Core Competencies with respect to the stated objectives by faculty, other team members, students, and nursing staff.
2. Case Logs: auditing of operative cases pertinent to the specialty in the Surgical Operative Log.
3. Written Examination: performance on the annual ABSITE examination, Body as a Whole, Cardiovascular and Respiratory sections
4. Patient Survey: performance will be assessed by patient surveys administered through the rotation.

DESCRIPTION OF THE ROTATION:

The Anesthesia rotation will consist of 2 to 4 weeks at the PGY1 level. The rotations will take place at the CHS UCLA Medical Center main OR area

1. The rotating residents will provide perioperative and intraoperative anesthesia care to inpatients and outpatient patients requiring operative interventions under local or regional anesthesia
2. They will also be part of the on call Anesthesia team that responds to blue codes and trauma codes and assists in establishing emergency non-surgical airway.
3. The rotating residents will participate in all Department of Surgery educational conferences and didactic presentations.
4. They are also expected to actively participate and present at the weekly Anesthesia Conference.

COMPETENCY BASED LEARNING OBJECTIVES

Patient care:

1. Complete a comprehensive physical examination and clinical data history, including pertinent diagnostic laboratory and radiographic findings for all patients undergoing surgical procedures under general or regional anesthesia under their care.
2. Induce and reverse anesthesia and establish an airway in patients undergoing surgical procedures
3. Monitor patients under anesthesia and mange unstable and critically ill patients undergoing surgical procedures
4. Recognize, prevent and treat common complications associated with administration of anesthetics, sedatives and muscle relaxants.
5. Properly prepare the anesthesia workstation
6. Properly perform a checkout and preparation of the anesthesia machine
7. Demonstrate the ability to use basic monitors and automated record keeping systems
8. Understand the importance of the pre-operative assessment.
9. Understand the importance of performing a post anesthesia visit and writing appropriate notes in the chart of every patient.
10. Understands the necessity for appropriate patient monitoring

Medical Knowledge:

1. Describe the role of the anesthesiologist as a perioperative physician
2. Define the components of anesthetic management
    a. Amnesia, b. Analgesia, c. Hypnosis, d. Muscle relaxation
3. Describe the stages of anesthesia.
4. Understand the need for a rapid sequence induction
5. List criteria for safe extubation of patients emerging from general anesthesia.
6. Display a basic understanding of anesthesia machine function
7. Describe the basic standards for patient monitoring
8. Understand different airway management techniques, (mask and oral /nasal airway, laryngeal mask airway, endotracheal tube)
9. Demonstrate the anesthesia machine preoperative checkout

10. Demonstrate the layout of an anesthesia workstation in an organized and logical fashion to minimize drug administration errors
11. Demonstrate the ability to set up an IV infusion, a hotline, and arterial line, simple intravenous syringe pumps and Imed infusors
12. Demonstrate the ability to perform bag mask ventilation, insert a laryngeal airway and an endotracheal tube using mannequins
13. Demonstrate the ability to perform Cardiopulmonary resuscitation
14. Demonstrate the ability to use a automatic cardiac defibrillator

Practice Based Learning:

1. Develop a personal program of self-study and professional growth with guidance from the teaching staff and senior residents. An understanding of the etiology, pathogenesis, pathophysiology, diagnosis and management of common situations encountered while administering anesthesia will allow for sound medical judgment, which relies on knowledge, rational thinking and the medical literature.
2. Accept criticisms with the understanding that the mutual goal is to improve patient care and personal performance
3. Utilize current literature resources to obtain up-to-date in information in Anesthesia care and practice evidence-based medicine.
4. Participate in activities of the Anesthesia Department (including all teaching conferences) and assume responsibility for teaching and supervision of subordinate surgical house staff, and medical students.
5. Participate in the Department Morbidity & Mortality conference and utilize information to further improve patient care.

Professionalism:

1. Practice compassionate patient care maintaining the highest moral and ethical values with a professional attitude.
2. Describe the anesthesiologist's responsibilities to ensure patient safely
3. Express understanding of HIPPA regulations as they pertain to management of patient care data.
4. Demonstrate understanding of the needs and feelings of others, including the patient's family members, allied health care personnel (nurses, clerical staff, etc.), fellow residents, and medical students.
5. Communicate and collaborate effectively in a team of health care providers
6. Demonstrate respect, compassion and integrity in the care of patients on a daily basis
7. Demonstrate mature and educated approach to Ethical issues commonly encountered in the field of Anesthesiology.
8. Show sensitivity to patients culture, age, gender and disabilities
9. Be self-aware and have knowledge of professional limits by practicing on-going medical education and self-improvement.
10. Be accountable to profession in their actions and decisions

Interpersonal Relationships And Communication:

1. Create and sustain a therapeutic and ethically sound relationship with patients and patient families
2. Work effectively with other members of the medical team including allied health care personnel (nurses, clerical staff, etc.), fellow residents, and medical students.
3. Maintain professional interactions with other health care providers and hospital staff
4. Understand the role of the preoperative evaluation as it applies to the development of a therapeutic patient relationship.
5. Identify common barriers to effective communication in both themselves and others and establish tools to facilitate effective communication.

Systems Based Practice:

1. Understand how the health care organization affects surgical practice
2. Demonstrate cost effective health care
3. Be able to coordinate multi-specialty and multidisciplinary care
4. Follow established practices, procedures, and policies of the Departments of Anesthesiology and Surgery and all integrated and affiliated hospitals.
5. Maintain complete of medical records operative notes staff sheets and notes, patient database cards and other patient care related documentation in a timely, accurate and succinct manner.

References:

UW Anesthsiology Resident Manual March 2005
Clinical Anesthesiology. Eds. Morgan Mikhail & Murray 3rd Edition.
Chapters: 1. The Practice of Anesthesiology
2. The Operating Room,
4. The Anesthesia Machine
5. Airway Management.
ASA Standards for Basic Monitoring (see appendix)
Anesthesia Machine check list (see appendix)

Section III

Introduction to Main OR Anesthesia

Welcome to the other side of the curtain! The bulk of your rotation through anesthesia will consist of working in the Main OR with an attending anesthesiologist or a senior resident.

In the operative room, anesthesiologists are responsible for the medical management and anesthetic care of the patient throughout the duration of the surgery. The anesthesiologist must carefully match the anesthetic needs of each patient to that patient's medical condition, responses to anesthesia, and the requirements of the surgery. We hope you will learn and appreciate first hand the role of the anesthesiologist in the operating room. In short, there are: 1) provide continual medical assessment of the patient; 2) monitor and control the patient's vital life function, including heart rate and rhythm, breathing, blood pressure, body temperature and body fluid balance; and 3) control the patient's pain and level of consciousness to make conditions ideal for a safe and successful surgery. After surgery, patients are transferred to the Post-Anesthesia Care Unit (PACU), where they continue to emerge from the effects of anesthesia. Evidence of recover—including activity level, adequacy of breathing, circulation, level of consciousness and oxygen saturation—is continuously monitored. The anesthesiologist decides when the patient has recovered enough to be sent home following outpatient surgery or has been stabilized sufficiently to be moved to a regular room in the medical facility or transferred to an intensive care unit.

Logistics

When assigned to the Main OR, you will be either paired up with a senior anesthesia resident or an attending. The daily assignments are posted on the bulletin board outside the Anesthesia Education Office (AS-267) as well as in the plastic display covers located at the lower right corner of the OR front board directly across from the OR control desk. The assignments for the following day are usually posted by 1500. If your name does not appear on the "Work Force" sheet, please notify the Anesthesia Clinical Coordinator immediately (Dr Thomas Grove x50373, or On-Call Attending x73185).

Upon arriving in the OR in the morning, please check the master schedule at the front desk for any changes that may have occurred. It is not unusual to have cases canceled, added, or re-sequenced overnight. These changes may affect how you set up your room, so it is important to check this first. You should arrive in the OR early enough (usually 0630 or check with your resident/attending) to assist your resident or attending with the setup of your room and be ready to induce anesthesia on your first patient by 0715 so that your patient can be ready to be prepped or positioned by 0730.

Preoperative Workup Guidelines

At the end of the day, please check to see where you are assigned on the following day. You should have rotated through the PES (Preoperative Evaluation Suite) fairly early on in your anesthesia rotation and therefore should be familiar with preop evaluations. If you are paired up with a resident, you should attempt to contact that resident to discuss how to split up the preop workload. If you are paired up with an attending, you will need to complete the preop as best as you can, then page that attending to discuss anesthetic setup and management plan.

Patients coming to the OR may be inpatients or outpatients. Inpatients should be seen in person on the afternoon/evening before surgery. Outpatients will either be admitted to the hospital following surgery (Same Day Admission) or go home the same day after surgery. Outpatient charts for the following day are available for review in the Procedure and Treatment Unit (PTU) usually after 1500. In the same manner as the PES for completing preop evaluations, you should review the charts and contact your outpatients by telephone. Be prepared to introduce yourself, advise them of what to expect on the day of surgery, answer questions and give final instructions with regard to taking medications and NPO status. If you are not comfortable or have questions, please contact the attending or senior resident with whom you are paired.

Sample Daily Schedule

0630	Arrive and setup OR in preparation for 1st case
0650	See patient in PTU (H&P, consent, start IV)
0715	Give pre-medication and bring patient back to OR

Length of clinical workload depends on the daily case assignment
This will be around 1500 or end time of the last schedule case

~1530	Check schedule for next day
~1530 - 1630	Work on preop evaluation for next day's cases
~1630	Clarify plan with senior resident or attending

Your schedule may differ depending on caseload or at discretion of anesthesia attending

Check List of Goals and Objectives

During your rotation through anesthesiology, you should become familiar with the following procedures and concepts.

Anesthesia Procedures
IV insertion
Preoxygenation
Mask ventilation
Placement of oral airways
Endotracheal intubation
Basic ventilator management
Extubation

Anesthesia Concepts
Preoperative Assessment
Airway Assessment
Airway Management
Preoxygenation
Inhaled Anesthetics
IV Anesthetics
Narcotics
Muscle Relaxants
Emergence from Anesthesia
Post-operative Pain Control

Section IV

Introduction to Preoperative Evaluation Suite (PES)

Preoperative Evaluation

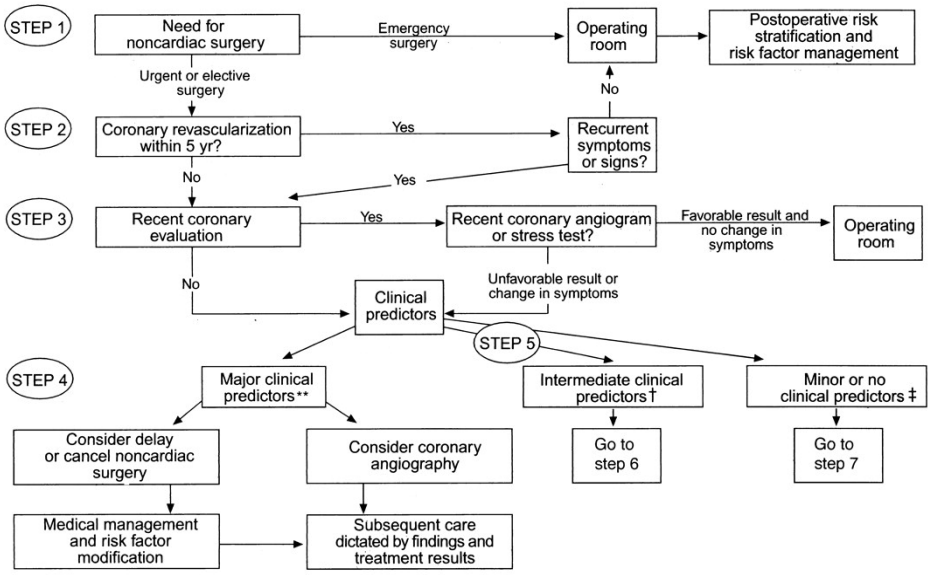
Anesthesiologists play a vital role in assessing a patient's medical readiness for surgery. They are unique in their advanced knowledge of both the medical illnesses that a patient undergoing surgery may suffer, as well as the effects on the body of the specific operation to be performed. The anesthesiologist's preoperative evaluation may be very brief (such as in the case of a surgical emergency) or very prolonged (such as in the case of a patient with multiple chronic medical problems who is to undergo an extensive operation). In all cases, however, the anesthesiologist performs a focused history and physical examination, reviews available laboratory and special test results, and assesses the need for additional testing prior to proceeding with surgery.

You will spend at least 1 day at PES where you will participate in preoperative evaluation and optimization of surgical candidates. The PES is located directly across the hall from the Ambulatory Surgery Center located on the 6th floor of Building 200 of the Medical Plaza. The PES team consists of an anesthesia attending, at least 1 anesthesia resident, and a team of RNs. On the days you are assigned to PES, you should come in proper business attire (white coat over business casual). The first patient is scheduled at 0800 with the last scheduled appointment at 1500. Chapter 9 in the *Basics of Anesthesia* text as well as ACC/AHA Practice Guidelines on Perioperative Cardiovascular Evaluation (included in syllabus) are excellent primers prior to the you PES experience.

The American College of Cardiology/American Heart Association (ACC/AHA) Practice Guidelines on Perioperative Cardiovascular Evaluation is highlighted on the next two pages. In short, the ACC/AHA guideline requires the following to be defined:

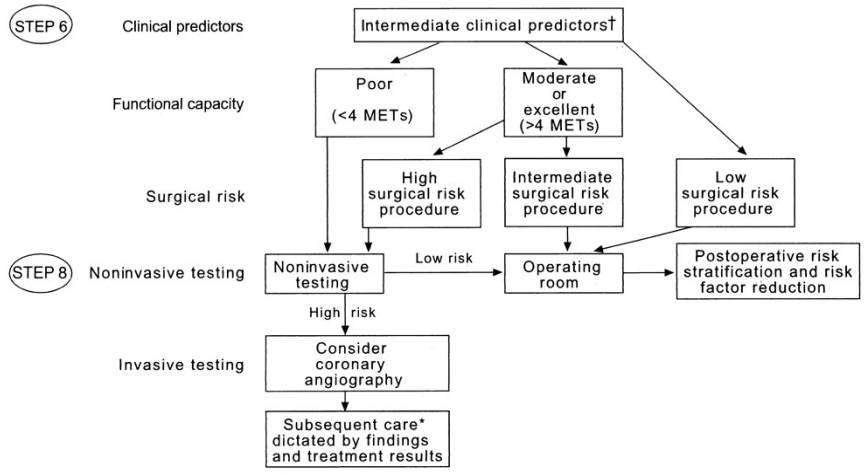
1. Clinical Predictors
2. Exercise Tolerance
3. Surgical Risk

The ACC/AHA guidelines in its entirety can be found at the following web site: http://circ.ahajournals.org/cgi/content/full/105/10/1257 The highlights of the guideline is duplicated on the following pages for easy reference. This includes the management algorithm along with Tables 1 thru 3 which defines the Clinical Predictors, Exercise Tolerance, and Surgical Risk.



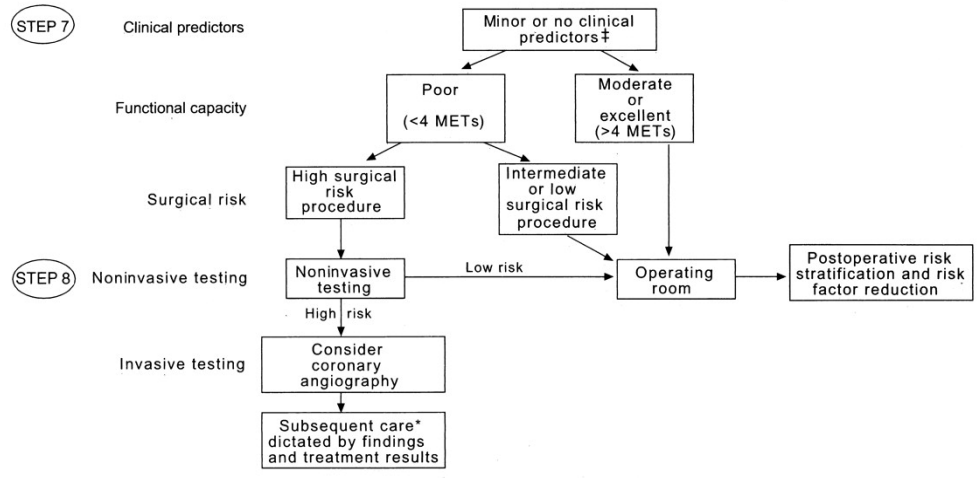
Major Clinical Predictors **

- Unstable coronary syndromes
- Decompensated CHF
- Significant arrhythmias
- Severe valvular disease



Intermediate Clinical Predictors†

- Mild angina pectoris
- Prior MI
- Compensated or prior CHF
- Diabetes mellitus
- Renal insufficiency



Minor Clinical Predictors ‡

- Advanced age
- Abnormal ECG
- Rhythm other than sinus
- Low functional capacity
- History of stroke
- Uncontrolled systemic hypertension

TABLE 1. Clinical Predictors of Increased Perioperative Cardiovascular Risk (Myocardial Infarction, Heart Failure, Death)

Major
Unstable coronary syndromes
• Acute or recent myocardial infarction with evidence of important ischemic risk by clinical symptoms or noninvasive study
• Unstable or severe angina (Canadian class III or IV)
Decompensated heart failure
Significant arrhythmias
• High-grade atrioventricular block
• Symptomatic ventricular arrhythmias in the presence of underlying heart disease
• Supraventricular arrhythmias with uncontrolled ventricular rate
Severe valvular disease
Intermediate
Mild angina pectoris (Canadian class I or II)
Previous myocardial infarction by history or pathological Q waves
Compensated or prior heart failure
Diabetes mellitus (particularly insulin-dependent)
Renal insufficiency
Minor
Advanced age
Abnormal ECG (left ventricular hypertrophy, left bundle-branch block, ST-T abnormalities)
Rhythm other than sinus (e.g., atrial fibrillation)
Low functional capacity (e.g., inability to climb one flight of stairs with a bag of groceries)
History of stroke
Uncontrolled systemic hypertension

ECG indicates electrocardiogram.

*The American College of Cardiology National Database Library defines *recent MI* as greater than 7 days but less than or equal to 1 month (30 days); acute MI is within 7 days.

†May include "stable" angina in patients who are unusually sedentary.

‡Campeau L. Grading of angina pectoris. *Circulation*. 1976;54:522–523.

TABLE 3. Cardiac Risk* Stratification for Noncardiac Surgical Procedures

High (Reported cardiac risk often greater than 5%)
• Emergent major operations, particularly in the elderly
• Aortic and other major vascular surgery
• Peripheral vascular surgery
• Anticipated prolonged surgical procedures associated with large fluid shifts and/or blood loss
Intermediate (Reported cardiac risk generally less than 5%)
• Carotid endarterectomy
• Head and neck surgery
• Intraperitoneal and intrathoracic surgery
• Orthopedic surgery
• Prostate surgery
Low (Reported cardiac risk generally less than 1%)
• Endoscopic procedures
• Superficial procedure
• Cataract surgery
• Breast surgery

*Combined incidence of cardiac death and nonfatal myocardial infarction.

†Do not generally require further preoperative cardiac testing.

TABLE 2. Estimated Energy Requirements for Various Activities

1 MET	Can you take care of yourself?	4 METs	Climb a flight of stairs or walk up a hill?
	Eat, dress, or use the toilet?		Walk on level ground at 4 mph or 6.4 km per h?
	Walk indoors around the house?		Run a short distance?
	Walk a block or two on level ground at 2 to 3 mph or 3.2 to 4.8 km per h?		Do heavy work around the house like scrubbing floors or lifting or moving heavy furniture? Participate in moderate recreational activities like
4 METs	Do light work around the house like dusting or washing dishes?		golf, bowling, dancing, doubles tennis, or throwing a baseball or football?
		Greater than 10 METs	Participate in strenuous sports like swimming, singles tennis, football, basketball, or skiing?

MET indicates metabolic equivalent.

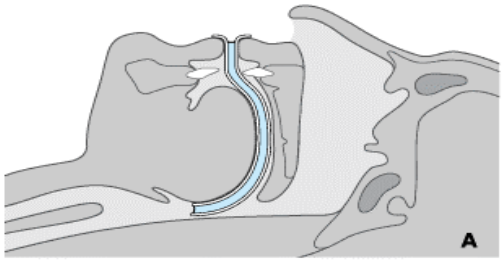
Adapted from the Duke Activity Status Index[20] and AHA Exercise Standards.[96]

Section V

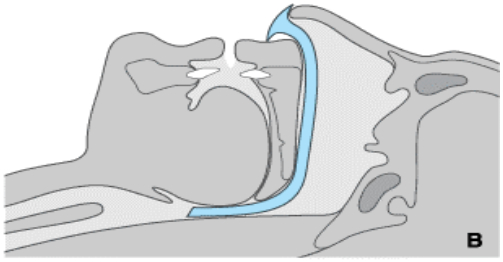
Introduction to Electroconvulsive Therapy (ECT)

During your anesthesia rotation, if time permits, you may rotate to the Neuro-Psychiatric Institute (NPI) to administer anesthesia for ECT. The primary goal of this mini-rotation is to learn airway management by ventilation with a facemask. You will also appreciate how anesthesia is administered in settings outside of the OR. We've decided to include ECT in your rotation because this is the one place where you are exposed to high volume of patients requiring airway management by facemask ventilation.

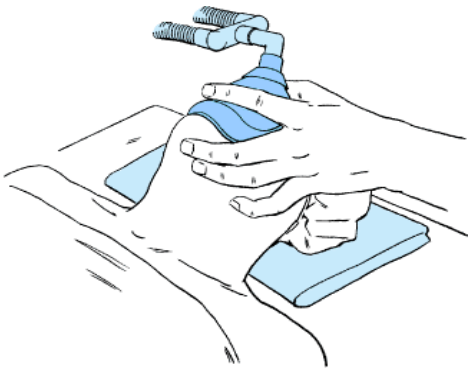
Facemasks are available in a variety of sizes and selecting the right size is of utmost importance. The upper border of the facemask should fit tightly over the bridge of the nose. The sides should seal just lateral to the nasolabial folds. The bottom should seat between the lower lip and the chin. The facemask is usually held to the patient face by the thumb and index finger exerting downward pressure on the facemask. The 3rd through 5th fingers exert counter-pressure by lifting the mandible thereby providing chin lift and jaw thrust. The off-hand is then used to generate positive pressure by compressing the ambu-bag. Ventilating pressure should be less than 20 cm H_2O to avoid insufflation of the stomach. Airway adjuncts such as oral or nasal airways can be inserted if mask ventilation is difficult. In addition, two-handed facemask technique can be used with a second person squeezing the ambu-bag.



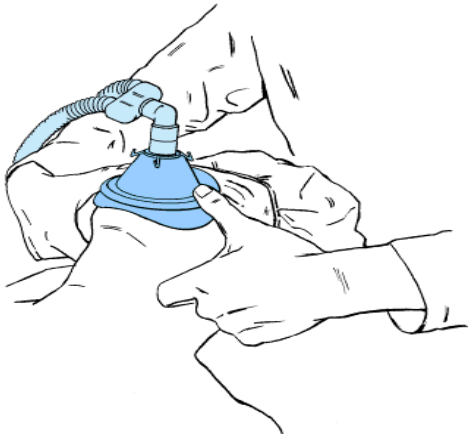
Oral Airway



Nasal Airway



One-handed Technique



Two-handed Technique

A brief primer of anesthetic considerations and logistics for ECT is included here. Please read before starting your day in ECT. Nearly all patients already have yellow-lines and therefore you are not required to preop ECT patients.

Preparing for ECT:

On the day before your scheduled ECT rotation, please page your attending to arrange the meeting place and time for the following morning. In the morning, you will help your attending setup drugs and necessary equipment. All ECT patients are initially seen by the ECT nurses. They will obtain anesthesia consent and start IVs. Once the patients arrive in the suite, a focused review of systems and airway evaluation is done. Monitors are then placed. A "time-out" is then done with drug dosages discussed. The patient is then preoxygenated with an ambu-bag, anesthesia induced with IV agents, paralyzed with succinylcholine, hyperventilated by facemask, and then shock is administered by the psychiatrists. Mask ventilation is maintained until the patient regains consciousness as well as spontaneously recovers from succinylcholine. Once deemed safe, the patient continues recovering in the ECT recovery area.

How Is ECT Administered?

The electroconvulsive shock is applied to one or both cerebral hemispheres to induce a seizure. Variables include stimulus pattern, amplitude, and duration. The goal is to produce a therapeutic generalized seizure 30–60 s in duration. Electrical stimuli are usually administered until a therapeutic seizure is induced.

Why Is Anesthesia Necessary?

When the efficacy of ECT was discovered, enthusiasm was tempered in the medical community because drugs were not used to control the violent seizures caused by the procedure, thus engendering a relatively high incidence of musculoskeletal injuries. Moreover, when an NMBA was used alone, patients sometimes recalled being paralyzed and awake just prior to the shock. The routine use of general anesthesia to ensure amnesia and neuromuscular blockade to prevent injuries has renewed interest in ECT. The current mortality rate for ECT is estimated to be one death per 10,000 treatments. The presence of an anesthesiologist is vital during ECT for airway management and cardiovascular monitoring.

What Are the Physiological Effects of ECT-Induced Seizures?

Seizure activity is characteristically associated with an initial parasympathetic discharge followed by a more sustained sympathetic discharge. The initial phase is characterized by bradycardia and increased secretions. Marked bradycardia (< 30 beats/min) and even transient asystole (up to 6 s) are occasionally seen. The hypertension and tachycardia that follow are typically sustained for several minutes. Transient autonomic imbalance can produce arrhythmias and T-wave abnormalities on the electrocardiogram. Cerebral blood flow and ICP, intragastric pressure, and intraocular pressure all transiently increase.

Are There Any Contraindications to ECT?

Contraindications are a recent myocardial infarction (usually < 3 months), a recent stroke (usually < 1 month), an intracranial mass, or increased ICP from any cause. More relative contraindications include angina, poorly controlled heart failure, significant pulmonary disease, bone fractures, severe osteoporosis, pregnancy, glaucoma, and retinal detachment.

What Are the Important Considerations in Selecting Anesthetic Agents?

Amnesia is required only for the brief period (1–5 min) from when the NMBA is given to when a therapeutic seizure has been successfully induced. The seizure itself usually results in a brief period of anterograde amnesia, somnolence, and often confusion. Consequently, only a short-acting induction agent is necessary. Moreover, because most induction agents (barbiturates, etomidate, benzodiazepines, and propofol) have anticonvulsant properties, small doses must be used. Seizure threshold is increased and seizure duration is decreased by all these agents. Following adequate preoxygenation, methohexital, 0.5–1 mg/kg, is most commonly employed. Propofol, 1–1.5 mg/kg, may be used but higher doses reduce seizure duration. Benzodiazepines raise the seizure threshold and decrease duration. Ketamine increases seizure duration but is generally not used because it also increases the incidence of delayed awakening, nausea, and ataxia and is also associated with hallucinations during emergence. Use of etomidate also prolongs recovery. Short-acting opioids such as alfentanil are not given alone because they do not consistently produce amnesia. However, alfentanil (10–25 mg/kg) can be a useful adjunct when very small doses of methohexital (10–20 mg) are required in patients with a high seizure threshold. In very small doses, methohexital may actually enhance seizure activity. Increases in seizure threshold are often observed with each subsequent ECT. Neuromuscular blockade is required from the time of electrical stimulation until the end of the seizure. A short-acting agent such as succinylcholine (1–1.5 mg/kg) is most often selected. Controlled mask ventilation using a self-inflating bag device or an anesthesia circle system is required until spontaneous respirations resume.

What Monitors Should Be Used during ECT?

Monitoring should be similar to what is appropriate with the use of any other general anesthetic. Seizure activity is sometimes monitored by an unprocessed electroencephalogram. It can also be monitored in an isolated limb: a tourniquet is inflated around one arm prior to injection of succinylcholine, preventing entry of the NMBA and allowing observation of convulsive motor activity in that arm.

How Can the Adverse Hemodynamic Effects of the Seizure Be Controlled?

Exaggerated parasympathetic effects should be treated with atropine. In fact, premedication with glycopyrrolate is desirable both to prevent the profuse secretions associated with seizures and to attenuate bradycardia. Nitroglycerin, nifedipine, and α- and β-adrenergic blockers have all been employed successfully to control sympathetic manifestations. High doses of β-adrenergic blockers (esmolol, 200 mg), however, are reported to decrease seizure duration.

Section VI

Introduction to Anesthesia Team Captain

In order to appreciate the entire "peri"-operative experience, your rotation may include spending one 12 hour shift shadowing the anesthesia Team Captain (TC). The TC is a senior anesthesiology resident backed-up by an attending who covers STAT consults for airway management, responds to cardiopulmonary arrests (Code Blue), responds to code trauma in the ER, and triages/optimizes patients who need emergency surgery.

Your day will start at 0700 where you and the Day TC will receive sign-out from the Night TC regarding any impending or ongoing emergency cases and airway issues in the hospital. Please call the TC phone (#70023) prior to 0700 to arrange time and place of signout. What you and the TC will encounter will vary widely. Be ready for anything from ER code traumas for airway management to assisting with IV placements on the Pediatric floor. Your day may range from numerous consults to none at all. Since your experience may be quite varied, we ask you to stay with the TC until 1900 to maximize your exposure. You are not expected to take call during your rotation so a late day with the TC is not unreasonable. Your involvement will depend on your own initiative, the comfort level of the TC and attending back-up. However, it is the policy of the anesthesia department that non-anesthesiologists may only intubate if an attending is present to supervise them. Listed below are some of the tasks you may encounter with the TC.

- Scheduling of emergency and add-on cases
- Triaging emergency patients with complicated medical problems
- Preoperative optimization of emergency and add-on cases
- Initial triage & planning the management of patients in respiratory distress
- Assist with intra-op management of difficult cases
- Postoperative evaluation and resuscitation
- Perform safe sedations for urgent airway management
- Perform safe airway management techniques outside the operating room
- Apply ACLS outside the operating room
- Coordination of the code team
- Facilitate OR management including allocation of anesthesia & surgical resources

Section VII

Suggested Reading & Lectures on DVD

A copy of *Basics of Anesthesia, 4th edition* by Stoelting and Miller is available for you to check out from Lucelva Mendez in our Anesthesia Education Office (CHS AS-267). As the name of the text implies, this is an introductory level book which serves as an excellent primer on the scope and practice of anesthesiology. The suggested reading includes:

Chapter 2: Basic Pharmacologic Principles
Chapter 4: Effects of Inhaled Anesthetics on Circulation and Ventilation
Chapter 5: Intravenous Anesthetics
Chapter 6: Opioids
Chapter 7: Local Anesthetics
Chapter 8: Neuromuscular Blocking Drugs
Chapter 9: Preoperative Evaluation and Choice of Anesthetic Technique
Chapter 12: Airway Management and Tracheal Intubation
Chapter 18: Fluid and Blood Therapy

Another popular text which many of our resident embrace is *Clinical Anesthesiology, 4th edition* by Morgan and Mikhail. This book offers more in-depth coverage of the basic principles and clinical considerations in the anesthetic management of patients. If you are so inclined, this book is available on-line by following the Harrison's On-Line link from the UCLA Mednet Website and clicking the Anesthesiology link under the LANGE Educational Library section. Harrison's On-Line is available at all UCLA Medical Center workstations or from your home personal computer if you have VPN installed.

Another highly recommended source of educational supplement is the CA-1 July Lecture Series available on DVD. This is the same series of lectures which our first year residents attended during their first month of anesthesia. They cover the most salient and pertinent aspects of basic anesthesiology. They may be checked out from Lucelva Mendez (CHS AS-267) to be view at home or in the anesthesia resident library. The following titles are available for your viewing:

- Preoperative Evaluation
- Airway Evaluation and Management
- Muscle Relaxants
- Inhaled Anesthetics
- IV Anesthetics
- Opioids
- Post-Anesthetic Care

Section VIII

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Section X

Self Assessment Exam

These brief questions are provided to help assess and reinforce the key concepts you are expected to know after your rotation through anesthesiology. Please print these pages out and discuss with your attending or resident. This is a good starting point for initiating discussions relating to pertinent anesthesia related topics.

Choose the best answer

1) The position best tolerated by the surgical patient is the
    a. Lithotomy position
    b. Prone position
    c. Horizontal supine position
    d. Trendelenburg position
    e. Fowler position

2) When using a Macintosh blade for laryngoscopy, the
    a. Epiglottis is lifted directly
    b. Laryngoscope is held in the right hand
    c. Blade enters the mouth on the left side
    d. Tip is advanced into the vallecula
    e. Handle should be rocked backwards to optimize laryngoscopic view

3) Nasopharyngeal airways are contraindicated in the patient with the following **except**
    a. Nasal polyps
    b. Infection of the nasopharynx
    c. Thrombocytopenia
    d. Jaw wired shut
    e. Midface fractures

4) In the supine position, pressure points which should be padded are the
    a. Occiput
    b. Elbows
    c. Heels
    d. Knees
    e. All of the above

5) The laryngeal mask airway (LMA)
    a. Protects against aspiration as well as an endotracheal tube
    b. Requires a rigid or flexible fiberoptic laryngoscope for proper placement
    c. Can be used safely in patients who are given muscle relaxants
    d. Has no role in management of difficult airways
    e. None of the above

6) Spontaneously breathing through an endotracheal tube of markedly inadequate size may lead to the following **except**
    a. Hypoventilation
    b. Patient fatigue
    c. Mediastinal shift
    d. Pulmonary edema
    e. Negative intrathoracic pressure

7) Clinically significant amounts of heat loss from a patient in the operating room occurs via which of these mechanisms?
    a. Conduction
    b. Radiation
    c. Convection
    d. Evaporation
    e. All of the above

8) The first-pass effect refers to
    a. The biotransformation of a drug in its vehicle of administration
    b. The change of a drug by enzymes in muscle
    c. Biotransformation of a drug as it passes through the intestinal mucosa and liver
    d. The drug lost by urinary excretion
    e. The drug lost by fecal excretion

9) Bioavailablility of a drug refers to the amount of drug that
    a. Is administered intramuscularly
    b. Is administered orally
    c. Reaches the liver
    d. Is excreted by the kidney
    e. Reaches its site of action

10) Local anesthetics have their effect at the
    a. Presynaptic nerve terminal
    b. Postsynaptic nerve terminal
    c. Gamma-aminobutyric acid (GABA) receptor
    d. Sodium channel
    e. Calcium channel

11) All of the following are capable of antagonizing neuromuscular block **except**
    a. Edrophonium
    b. Neostigmine
    c. Atropine
    d. Pyridostigmine
    e. Physostigmine

12) The action of propofol after a bolus IV injection is terminated by its
    a. Elimination unchanged by the kidneys
    b. Biotransformation by the liver
    c. Being bound to proteins
    d. Redistribution
    e. Uptake into the CNS

13) When succinylcholine is administered in a dose of 1mg/kg, one may expect all of the following **except**
    a. An intraocular pressure increase
    b. An increase in intragastric pressure
    c. Bradycardia in infants and children
    d. Tachycardia after multiple doses in adults
    e. Hyperkalemia in paraplegic patients

14) A 9-year-old boy sustained a 40% burn to the anterior portion of his body. On the twentieth day after the burn, he is brought to the operating room for a skin graft. Anesthesia in induced with propofol and succinylcholine. The electrocardiogram shows a bizarre tracing followed by asystole. The most likely cause of the arrhythmia is
    a. An overdose of propofol
    b. Hypoxia
    c. Hyperkalemia
    d. Electrocution
    e. Administration of the wrong drug

15) A patient is admitted for emergency orthopedic surgery. Preliminary data shows a blood urea nitrogen (BUN) value of 85 mg/dL and a serum potassium of 6.5 mEq/L. The drug of choice for intubation would be
    a. Pancuronium
    b. Rocuronium
    c. Succinylincholine
    d. Cisatracurium
    e. Small dose of non-depolarizer followed by succinylcholine

16) The administration of anticholinesterase drugs will
    a. Prolong all neuromuscular blockade
    b. Always reverse nondepolarizing agents
    c. Shorten the block of a depolarizing agent
    d. Reverse nondepolarizing agents if the plasma concentration of the nondepolarizer is low enough
    e. Has no systemic side effects

17) The inability to sustain contraction (fade) during tetanic contraction is due to
    a. Inability to transmit rapid electrical impulses
    b. Cellular loss of potassium
    c. Depletion of cellular deoxyribonucleic acid (DNA)
    d. Inability of recording apparatus to show all contractions
    e. The inability of the endplate to release sufficient acetylcholine